REMARKS

The Office action has been carefully considered. The Office action objected to the claims, in general, because claim 39 was not presented and the numbering sequence was interrupted. The Office action also rejected claims 1-42 under 35 U.S.C. § 102(e) as being anticipated by Ravikanth, U.S. Patent No. 6,327,274 (hereinafter "Ravikanth"). Further, claims 29-38 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicants have amended the numbering of the claims as requested by the Examiner and respectfully disagree with the rejections of the claims.

By present amendment, claims 19, 29, 35 and 39-41 have been amended for clarification and not in view of the prior art. Original claims 40-42 have been renumbered by amendment to obviate the objection to the claim numbering scheme. Applicants submit that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Applicants thank the Examiner for the interview held (by telephone) on January 6, 2004. During the interview, the Examiner and applicants' attorney discussed the claims with respect to the prior art. The essence of applicants' position is incorporated in the remarks below.

Prior to discussing reasons why applicants believe that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

The present invention is directed to a method and system for measuring the latency of a network between transmitted packets from a sending computer to a receiving computer. The term latency is used widely in the industry and is defined as the amount of time it takes a packet to be transmitted from a source to a destination. Generally, latency only measures the amount of time that the packets take to get from the final transmission process in a sending computer system to the first receiving process in the receiving computer. That is, other factors, such as queue time and checksum calculations, are not included in determining latency. Thus, in any system for measuring latency, it is important to determine the exact time (via a timestamp) that a packet departs the transmitting computer and the exact time (via a second timestamp) that the packet is received at the receiving computer. Additionally, other factors are typically accounted for in the measurement, such as clock skew (the amount that one clock is faster than the other between the sending computer and the receiving computer) and lack of clock synchronization (the fact that each computer's clock may not be set to the same time.)

Embodiments of the present invention are directed to a method and a system for transmitting a group of packets from a sender to a receiver, wherein each packet is associated with a sender-relative timestamp and a receiver-relative timestamp. Based on these two timestamps, the network latency is calculated (taking into account other factors such as clock skew and lack of synchronization) and then associated with each packet. Note that the above description is for

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example and informational purposes only, and should not be used to interpret the claims, which are discussed below.

Turning to the claims, independent claim 1 recites a method for obtaining information for packets transmitted over a network. The method comprises transmitting a plurality of packets from a sender to a receiver, including at least one selected packet, associating a sender-relative timestamp with each selected packet transmitted, receiving at least some of the plurality of packets, associating a receiver-relative timestamp with each selected packet received, and associating a latency based on the sender-relative timestamp and the receiver-relative timestamp associated with each selected packet received.

The Office action rejected claim 1 as being anticipated by Ravikanth. Specifically, the Office action contends that column 2, lines 5-60 and column 4, lines 1-10 discloses the method recited in claim 1. Applicants respectfully disagree.

The cited and applied reference teaches, generally, a method for determining a skew rate between a source node clock and a receiver node clock. See column 3, lines 22-25 of Ravikanth. At best, Ravikanth may generally teach transmitting a plurality of packets from a sender to a receiver, associating a sender-relative timestamp with the packets, and associating a receiver-related timestamp with the packets. However, Ravikanth does not teach or even suggest associating a latency with each selected packet.

For example, Ravikanth teaches a method to determine clock skew between two computers in a network. In this method, the two clocks are first synchronized

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in order to eliminate clock offset. See column 4, lines 51-64 of Ravikanth. Then

packets are transmitted from the sender to the receiver. See column 4, lines 65 to

column 5, line 3. Each packet is timestamped at the sender and at the receiver so

as to provide a relative time of transmission and receiving. Then, because the

clocks were initially synchronized, (or at the very least, the offset was known

before), the clock skew can be calculated by the drift in the transmission timestamp

and the receiver timestamp through an averaging calculation. See column 5, lines

9-64. It is necessarily assumed that the network latency is constant and in fact,

Ravikanth specifically recites that the measured delay coincides with the actual if

and only if the clocks are synchronized. See column 4, lines 47-50. Furthermore,

the true latency of the network is not able to be determined because other factors,

such as queue time and the skew rate itself, are not factored out of the calculation.

That is, Ravikanth may teach a method for determining the skew rate between two

computers, but not the network latency. Calculating latency and calculating skew

rate based on sender-relative and receiver-relative timestamps are mutually

exclusive calculations since the skew rate must be factored out of the latency

calculation and the latency must be factored out of the skew rate calculation.

Therefore, in direct contrast with the method taught by Ravikanth, claim 1 is

directed toward a method for determining a latency associated with a network. As

shown above, network latency is not a clock skew rate. For at least these reasons,

applicants submit that claim 1 is patentable over the prior art of record.

With regard to claims 2-18, these claims depend either directly or indirectly

from claim 1. Applicants submit that claims 2-18 are also allowable for the

additional patentable elements included in these claims. For example, claim 7 recites the method of claim 1 further comprising normalizing the latency associated with each selected packet. The Office action contends that Ravikanth teaches the recitations of claim 7 in column 5, lines 15-35. Significantly, the cited and applied portion of Ravikanth instead teaches a method for normalizing the skew rate calculated between two computers. As shown above, latency and skew rate are different characteristics in a network. For at least this additional reason, claim 7 is patentable over Ravikanth.

As another example, claim 19 recites a system for obtaining information transmitted over a network. The system comprises a network sender system that includes a sender process configured to cause transmission of a plurality of selected packets on the network and a sender component configured to associate a sender timestamp of the sender with each selected packet. The system further comprises a network receiver system configured to receive each selected packet transmitted on the network that includes a receiver component configured to associate a receiver timestamp with each selected packet received and a receiver process, the receiver process determining a latency based on the sender timestamp and the receiver timestamp and maintaining information corresponding to the latency, the sender timestamp, and receiver timestamp in association with each selected packet.

The Office action rejected claim 19 by citing the same portions of Ravikanth that were cited in the rejection of claim 1. Applicants respectfully disagree with this rejection.

As shown above, latency and skew rate are different characteristics in a network. Ravikanth teaches, generally, a method for determining a skew rate between two computers. Significantly, Ravikanth does not teach or even suggest a receiver process that determines a latency based on a sender timestamp and a receiver timestamp as recited in claim 19. For at least this additional reason, claim 19 is patentable over Ravikanth.

With regard to claims 20-28, these claims depend either directly or indirectly from claim 19. Applicants further submit that claims 20-28 are also allowable for the additional patentable elements included in these claims.

Turning to claims 29-38, the Office action has rejected these claims as being anticipated by Ravikanth and as not being patentable subject matter because data structure's fields alone cannot describe the claimed invention. Applicants respectfully disagree with each of these rejections.

Whether computing software methods and data structures are patentable within the meaning of 35 U.S.C. §101 has been the subject of much controversy and a number of legal decisions. In *Gottshalk v. Benson*, 409 U.S. 63, 34 L. Ed. 2d 273, 93 S. Ct. 253 (1972), the Supreme Court held that neither a mathematical formula nor an algorithm for making mathematical computations or conversions can be patented in and of itself. In *Parker v. Flook*, 437 U.S. 584, 57 L. Ed. 2d. 451, 98 S. Ct. 2522 (1978), the Supreme Court stated that insignificant post-solution activity will not transform the unpatentable principle into a patentable process. The Supreme Court clarified the bounds of patent protection for computer-based inventions in *Diamond v. Diehr*, 450 U.S. 175, 209 U.S.P.Q. 1

(1981). In this decision, the Supreme Court held that for a computer-based solution to patentable, it must either: a) result in a physical transformation outside the computer and be related to a practical application in the technological arts or b) be limited to a practical application of an abstract idea or mathematical algorithm within the technological arts. In subsequent cases, the United States District Court for the Federal District has consistently held that a practical application of an abstract idea or mathematical algorithm qualifies as patentable subject matter. See In re *Allapat*, 33 F.3d 1526, 1569, 31 U.S.P.Q.2d 1546, 1556-57 (Fed. Cir., 1994) (holding that unpatentability of the principle does not defeat patentability of its practical applications); See also AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1358, 50 U.S.P.Q.2d 1447, 1452 (Fed. Cir., 1999) (holding that a claim is statutory when it is limited to practical application of a principal that produces a concrete, tangible, and useful result).

Applicants respectfully submit that claims 29-38 are directed toward a practical application of an abstract idea. That is, by organizing a data structure such that three fields are operable to store a sender timestamp, a receiver timestamp, and a latency calculated from the sender timestamp and the receiver timestamp is practical because each data structure may be associated within a data packet such that the network latency is stored within every data packet.

Regarding the rejections based on the teachings of Ravikanth, the Office action contends that Ravikanth discloses a data structures having the recitations of claims 29-38. Applicants respectfully disagree.

As shown above, Ravikanth fails to disclose a system or a method for determining the latency of a network. Significantly, Ravikanth only teaches a method for determining a skew rate. As such, Ravikanth does not teach or even suggest a data structure having fields operable to store data representative of a latency as recited in claim 29. Nor does Ravikanth teach a data structure having fields operable to store data representative of a send time and receive time suitable to determine a latency as recited in claim 35. Applicants submit that claims 28-39 are allowable over the teachings of Ravikanth.

Turning to claims 39-41, the Office action rejected these claims as being anticipated by Ravikanth and has cited the same portions of Ravikanth as cited in the rejection of claim 1 and has argued the same reasons presented in the rejection of claim 1. As shown above, latency and skew rate are different characteristics in a network. Ravikanth teaches, generally, a method for determining a skew rate between two computers. Ravikanth does not teach or even suggest the recitations of claims 39-41. For at least this additional reason, applicants submit that claims 39-41 are allowable.
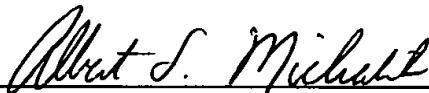
For at least these additional reasons, applicants submit that all the claims are patentable over the prior art of record. Reconsideration and withdrawal of the rejections in the Office Action is respectfully requested and timely allowance of this application is earnestly solicited.

CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-41

are patentable over the prior art of record, and that the application is good and

proper form for allowance. A favorable action on the part of the Examiner is

earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the

prosecution of the subject application, the Examiner is invited to call the

undersigned attorney at (425) 836-3030.

Respectfully submitted,

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